













The TMDL analysis will specifically identify the TMDL’s geographic scope. For this project, TDG problems will be analyzed in the mainstem Columbia River from the Canadian border to the river’s mouth near Astoria, and in the mainstem Snake River from the confluence of the Clearwater River above Lower Granite dam to the river’s confluence with the Columbia River. The waters of Oregon and Washington are discussed in this workplan, while Tribal waters including Lake Roosevelt will be addressed in the future. The TMDL report will provide a more detailed analysis of geographic considerations.

For this TMDL, applicable water quality standards for the Columbia and Snake Rivers have been established by Oregon, Washington, and the Colville Confederated Tribes. The Spokane Tribe of Indians have Tribally-approved water quality standards. The numeric target for total dissolved gas that represent achievement of these water quality standards is a total dissolved gas saturation level of 110% which is not exceeded for river discharges up to 7 day, 10-year frequency flood flows. (The Colville Tribe standards do not include a clause regarding the flows for which the TDG criterion applies.) These criteria will be modeled based on historic records and monitored to ensure that standards are not exceeded for future flows.

Special conditions (or “waivers”) have been created for voluntary spills from the Columbia and Snake River dams for purposes of fish passage. In Washington these special conditions have been included in the State Water Quality Standards rule, and in Oregon the Environmental Quality Commission has granted variances on an annual basis. Washington’s special conditions require maximum TDG levels, measured as the 12-hour maximum average, of 120% in dam tailraces and 115% in dam forebays and below Bonneville dam at Camas/Washougal, and an hourly maximum level of 125%.

Voluntary salmon spills are currently being managed to meet the TDG waiver levels. The goal of the TMDL will be compliance with the 110% TDG criterion, but the special conditions for fish passage may be applied as an interim compliance target. Appropriate alternative measures may be proposed to evaluate compliance with the TMDL, such as maximum spill volumes that allow compliance with the standards under current dam configurations.

The problem identification process will define the problem and identify the pollutant for which the TMDL will be established. For this TMDL the problem is fairly simple and well understood: spills from the Columbia and Snake River dams produce elevated TDG levels that can cause Gas Bubble Trauma (GBT) in fish. GBT symptoms are observed regularly in the Columbia and Snake









